



**Figure S1.** Controlled freezing of *Solanum tuberosum* leaves. (A) The petioles of detached leaves were placed in cotton-filled Eppendorf tubes. Then, an aqueous suspension containing a small amount of ice nucleation active bacteria was added. The Eppendorf tubes were connected to each other using glass-fiber-coated wire that had previously been soaked in the same suspension. To prevent the fiberglass coating from drying out, the wire was inserted into a narrow polyvinyl chloride tube. The leaves were fixed on a polystyrene block. Fine-wire thermocouple sensors were positioned on the lower surface of the leaves to record the leaf temperature and, thus, also the ice formation in the leaf tissue. Wrapping the leaves in cling film increased the thermal insulation of the leaves during the freezing treatment. (B) The same leaves 1 h after thawing. For freeze-fixation, leaf discs (arrows) were punched out from the frozen leaves for subsequent high-pressure freeze-fixation. The leaves were completely undamaged by the freezing treatment applied ( $-2.5^{\circ}\text{C}$  for 20 to 35 min). (C) Leaf temperatures of the three leaves recorded during the freezing treatment. By connecting the Eppendorf tubes via the glass-fiber-coated wire, once nucleated, the ice was able to spread from the first frozen leaf to the others within 2 min (arrows indicate the freezing exotherms), so that all leaves froze almost simultaneously.